March 10, 1925. 1,529,087

C. D. REYNOLDS

BRAKE FOR ROTARY WINDING DRUMS

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Fig. 2.

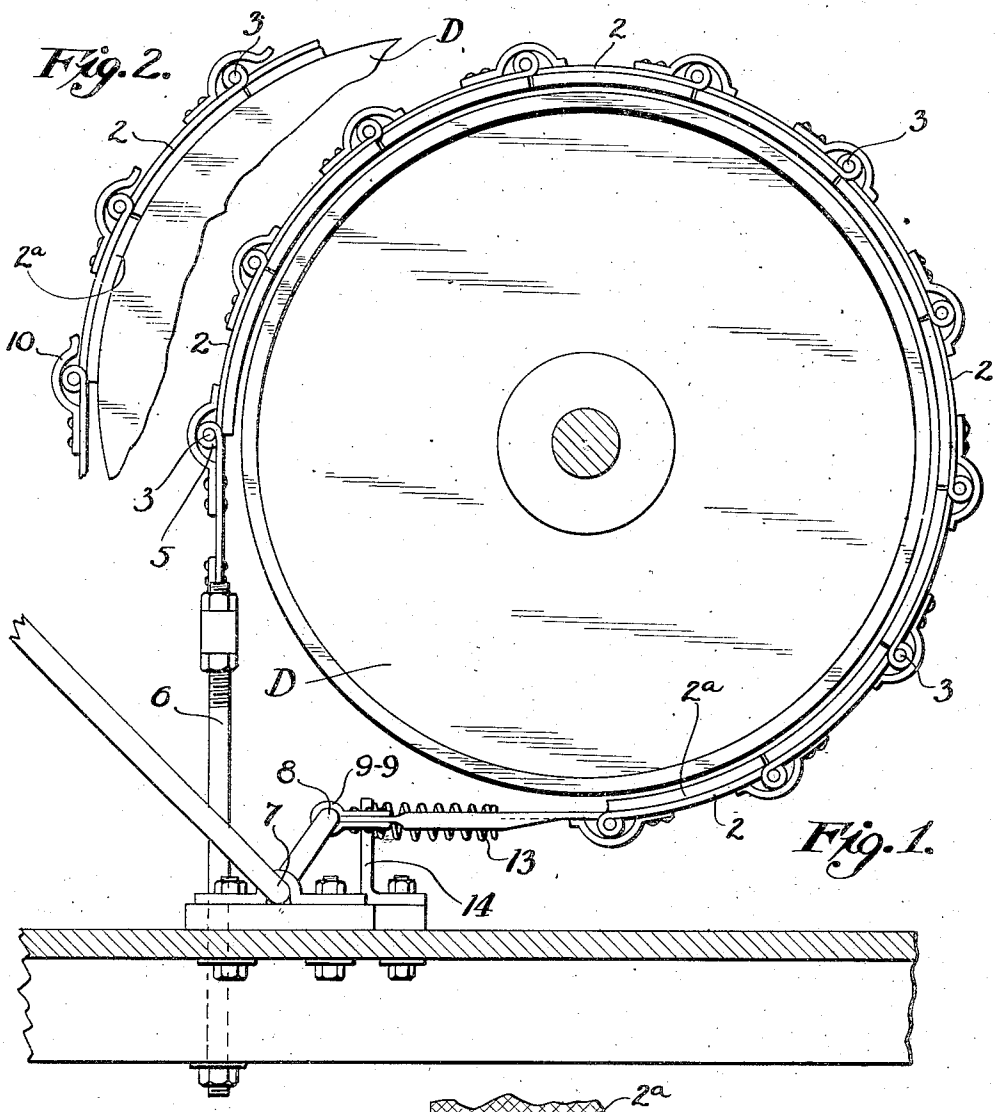


Fig. 1.

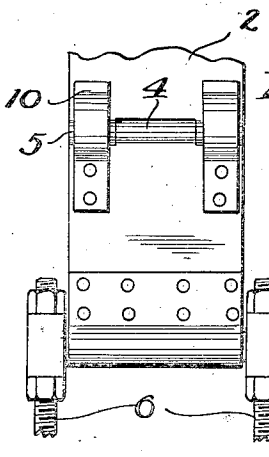


Fig. 3.

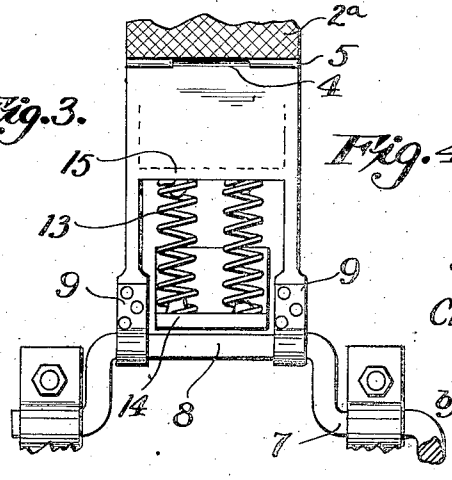


Fig. 4.

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Fig. 6.

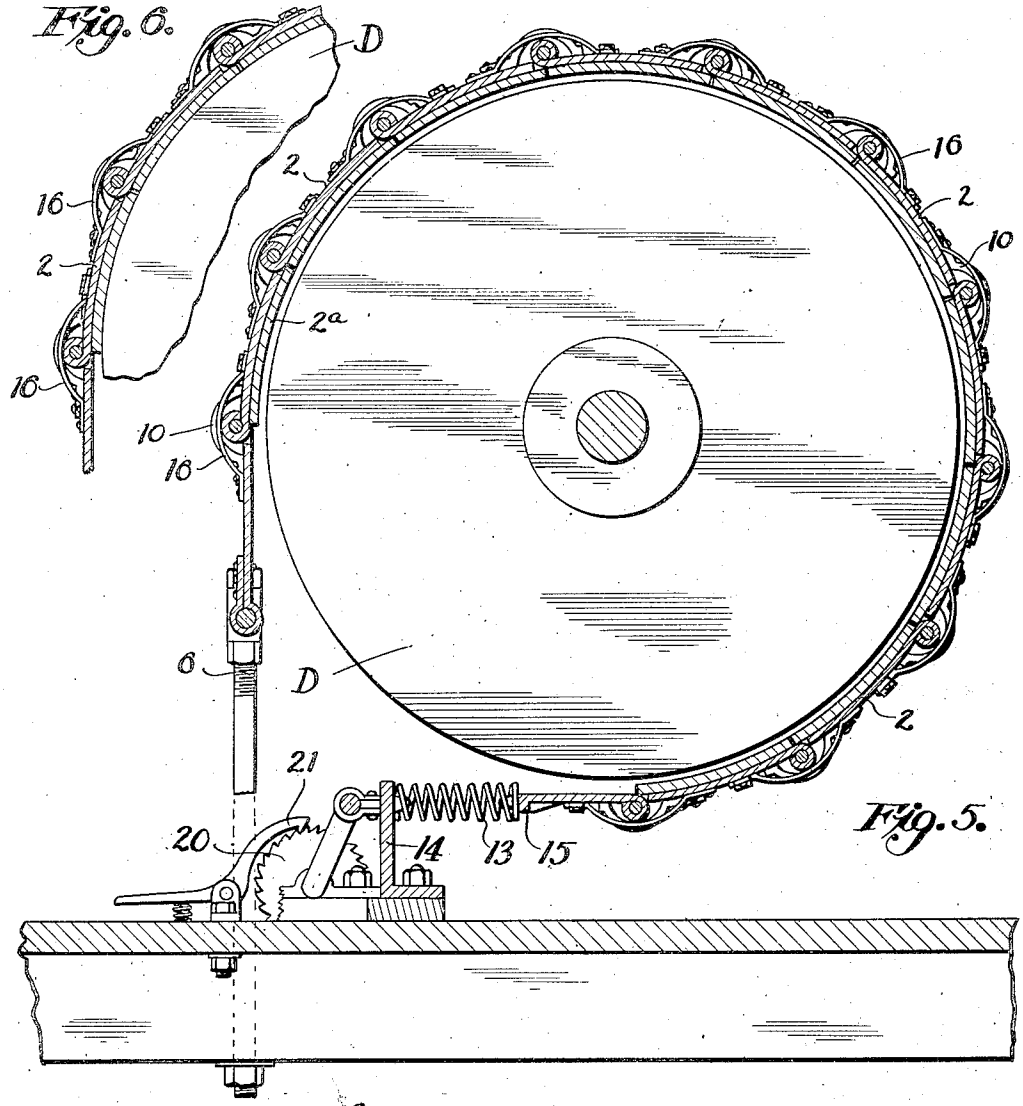


Fig. 5.

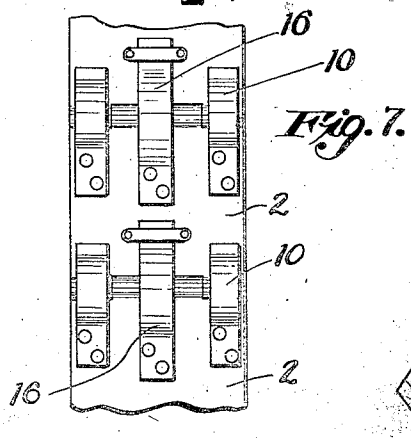


Fig. 7.

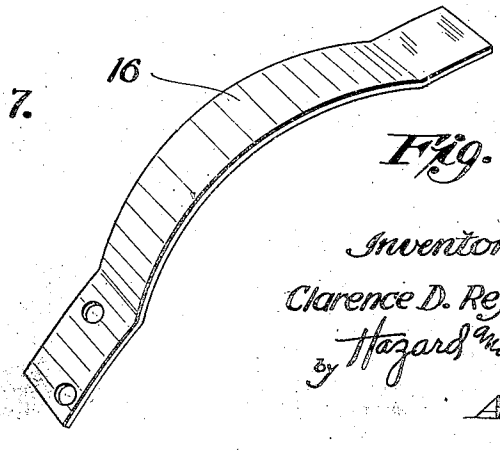


Fig. 8.

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Patented Mar. 10, 1925. 1,529,087

UNITED STATES PATENT OFFICE.

CLARENCE D. REYNOLDS, OF WHITTIER, CALIFORNIA.

BRAKE FOR ROTARY WINDING DRUMS.

Application filed February 8, 1923. Serial No. 617,705.

To all whom it may concern:

Be it known that I, CLARENCE D. REYNOLDS, a citizen of the United States, residing at Whittier, in the county of Los Angeles and State of California, have invented new and useful Improvements in Brakes for Rotary Winding Drums, of which the following is a specification.

This invention relates to brake apparatus and more particularly to brakes for rotary winding drums.

An object of the present invention is to provide a winding drum brake designed to effectually grab or clutch the cylindrical face of a brake drum when the drum is to be stopped and which brake band is designed to effectively release, substantially without drag upon, the brake drum when tension of the brake band is removed. Another object is to provide a brake band of sectional construction and having means in the form of hinged joints and stop elements at the joints to prevent the unbuckling or opening movement of the band beyond predetermined condition.

Another object is to provide means for normally relaxing the brake band from its associated drum so as to release the drum, and in this connection it is an object to provide automatically acting means to relax the brake band.

A further object is to provide a brake band of sectional construction in which the sections are hingedly connected and are also provided at the hinge connections with means tending to normally expand the brake band and maintain it in a relaxed position substantially uniformly throughout the length of the band.

Other objects and advantages will be made manifest in the following specification of an embodiment of the invention illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of the improved brake band in the relaxed position as to its associated drum.

Fig. 2 is a side elevation of a fragment of the band and a fragment of the drum; the band being in contracted braking position.

Fig. 3 is a detail front elevation of the anchored end of the brake band and its anchors.

Fig. 4 is a plan of the tensioning device and the attached end of the band, and showing means for slacking up the band when the tensioning device is released.

Fig. 5 is a side elevation and vertical section of the braking apparatus in which a modified form of the brake relaxing means is shown; the brake band being in distended position.

Fig. 6 is a sectional view of a fragment of the contracted brake band and a fragment of the drum.

Fig. 7 is a plan of a fragment of the band.

Fig. 8 is a perspective of one of the extending springs.

The brake band of the present invention is adapted to be used in various mechanical organizations, and in the present case is shown as associated with an end drum or cylindrical member which may form a portion of a rotary winding reel, for instance. The improved brake band consists of a number of substantial arcuate sections 2 of cylindrical dimensions corresponding to the drum D. Each of the sections 2 are hingedly or pivotally connected as by pintles 3 transversely arranged and received in suitable bearing ears 4 and 5 formed complementary to be alined at meeting ends of the brake sections 2. A sufficient number of the sections are assembled to form a brake band of desired length, and one end of the band is anchored in the usual, or any suitable, manner, as for instance, as by substantial stay bolts 6 which may be mounted in any suitable fixed structure. The opposite end of the brake band is in the usual, or any suitable manner, attached to an appropriate form of tensioning device which may consist of a rock shaft 7 having a crank 8 connected in bearing lugs 9—9 attached to the contiguous end section of the brake band, as clearly shown in Figs. 1 and 4.

A feature of the present invention is to provide means for limiting the opening or expanding action of the jointed link sections 2, and such means may consist of suitable stops shown as including, in the present case, fingers 10 each fixed to one of the links and straddling the hinge joint and reaching toward and over the outer face of the next contiguous link. In the contracted position of the band as shown in Fig. 2, the fingers 10 are spaced slightly beyond and are, therefore, out of contact with the band sections. Should the sections swing relatively to each other in expanding to a predetermined de-

gree they will be engaged by the contiguous ends of the fingers 10 and, therefore, further expanding or relative outward buckling of the link connections will be prohibited.

Preferably, the brake band sections 2 are provided with suitable linings 2^a to take the wear of action on the brake drum D.

The relaxation of the brake band may be secured as by means of expansion springs 13 compressed between a fixed abutment 14 contiguous to the free end of the band, and such springs at their opposite ends bear on a cross piece 15 provided by the end link of the band. From this it will be seen that the brake band may be tensioned in braking action upon the drum D by rotation of the rock shaft 7 so as, by means of the crank 8, to draw the band tightly around the drum during which time the springs 13 will be further compressed. Rotation of the rock shaft 7 in the opposite direction decreases the tension of the band and this is further slacked by the loosening reaction of the springs 13.

In Figs. 6 to 8 inclusive a form of band relaxing means is shown as including spring devices arranged at the hinge joints of the several sections, and such devices are shown as including substantial springs 16, one end of which may be secured to a contiguous link, while the opposite end crosses the hinge joint and is operatively connected to the next contiguous link; the action of the springs 16 being to tend to swing each of the link sections in an outward position with respect to the center of the band.

It will be understood that either form of brake relaxing device, or the combination of them, may be utilized.

It is understood that a brake holding device may be employed, such for instance as a ratchet wheel 20 fixed on the rock shaft and engaged by a yielding pawl 21.

Further embodiments, modifications and variations may be resorted to within the spirit of the invention as here claimed.

What is claimed is:

1. In a drum brake apparatus, a brake band consisting of a number of pivotally connected sections, and means for limiting movement of the pivoted sections in one direction on their pivots, said means including fixed stops attached to the ends of certain sections to overlap ends of next adjacent sections.

2. In a drum brake apparatus, a brake band consisting of a number of pivotally connected sections, fingers secured to corresponding ends and against the outer faces of the sections to cross the joints and limit the swing of the sections in open directions.

3. In a drum brake apparatus, a brake band consisting of a number of pivotally connected sections, substantial springs secured to corresponding ends of the sections and against their outer faces and crossing the joints, and means forming sliding connections between the free ends of the springs and the adjacent sections to which the springs are attached, the tension of the springs being exerted to open the band.

In testimony whereof I have signed my name to this specification.

CLARENCE D. REYNOLDS.